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冬小麦条锈病害与常规胁迫的定量化识别研究——

Title: Quantitative identification of stripe rust and common stress on winter wheat:application of hyper-spectrum

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关键词: 高光谱; 条锈病; 肥水胁迫; 定量化

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摘要: 通过对人工田间诱发条锈病与常规的水胁迫及肥水协同胁迫的处理,分析获取的地物光谱数据及提取的归一化植被指数(NDVI)和光化学植被指数(PRI),定性地研究了条锈病害胁迫与常规胁迫条件下冬小麦冠层光谱特征的差异和规律,并进一步利用高光谱对冬小麦条锈病与常规胁迫进行了定量化的识别研究。选用NDVI和PRI建立二维空间坐标,形成病害胁迫、常规的水胁迫及肥水协同胁迫植被指数的空间分布散点图,结果表明NDVI值大于$4.324 \times PRI+0.976$的区域即为条锈病胁迫发生区域。经验证,上述定量化表达的分类识别精度达到了70%以上。

Abstract: This paper studied the difference and law of canopy spectral characteristics of winter wheat under conditions of stripe rust stress and conventional stress by use of hyperspectral remote sensing and normalized vegetation index (NDVI),INDVI.The experiment was carried out under the condition of the stripe rust through artificial inoculation and water stress/fertilizer-water stress.Furthermore,the stripe rust stress was identified quantitatively by hyperspectral remote sensing.A two-dim ensional spatial coordinate was established based NDVI and photochemical reaction index (PRI), I_{PRI}, and all

stress pointswere displayed in the spatial coordinate.Finally, the equation $I_{NDVI}=4.324I_{PRI}+0.976$ was obtained, and the points of the stripe rust stresswere identified when the I_{NDVI} of observation point was more than $4.324I_{PRI}+0.976$.It is verified that the accuracy of the equation is more than 70%.It indicates that the equation could offer a discrimination standard for inversion of disease and a elmi ination of pseudo-information.

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